AI-assisted Mini Publics on Local Climate Action

Kirklees Field-Study Report

Leeds, July 2026

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Summary

Kirklees Field-Study

As part of a larger UKRI-funded research project, a field-experiment study was conducted to assess whether an AI assistant with bespoke, place-based knowledge can assist citizens in a mini-public setting to deliberate on and develop local climate actions. For this purpose, two mini-publics (one without AI assistant, one with AI assistant) were conducted on the 2nd and 9th of April 2026 at the Ravensthorpe Community Centre. 29 participants (14 in the mini-public group without AI access, 15 in the mini-public group with AI assistant) were recruited from the local community by the Ravensthorpe Community Centre. Overall, 42 proposals (24 in the group without AI assistant, 18 in the group with AI assistant) were generated. These were assessed blindly (without knowing which mini-public group had generated them) for quality by Kirklees Council climate change officers and by a researcher with domain expertise. The mini-publics were audio-recorded, and data was collected from participants.

Key Takeaways

1. Bespoke AI assistants with place-based understanding can support citizens to better understand options for local climate action
2. AI assistants can help citizens produce, on average, higher quality policy inputs by providing (place-based) expertise (about 37% quality improvement)
3. AI assistants do not remove the need for human facilitators
4. Councils could employ AI assistants to facilitate higher-quality citizen engagement
5. There are caveats, as AI assistants may disrupt citizen deliberation flow and make citizens potentially less confident in trusting their lived experience

Background

This project is part of Prof. Viktoria Spaiser's UK Research & Innovation Future Leaders Fellowship grant and Rayan Onyonka's PhD project. The project had two goals: (1) Develop a bespoke AI assistant, with place-based climate solution knowledge to assist citizens in deliberating and developing local climate policy proposals; (2) Test the AI tool in a live field-experiment to examine to what extent the AI assistant can help citizens to produce higher quality policy input. Spaiser and Onyonka partnered with Hope for the Future, a Sheffield-based charity that equips communities and individuals to communicate the urgency of the climate and nature crises to politicians, to help prepare and facilitate the field-experiment in the form of community-based mini-publics. Additionally, a partnership was established with the Kirklees Council to ensure support for the project from local authorities. Kirklees Council set up contact to the Ravensthorpe Community Centre, who agreed to recruit 30 community members for the field-experiment mini-publics.

Two mini-publics (one control group mini-public without AI assistant and one experimental group mini-public with AI assistant) took place on the 2nd and 9th of April 2026 respectively at the Ravensthorpe Community Centre, with the control group mini-public taking place first. The mini-publics were three hours (10:00 – 13:30, with 30 minutes reserved for data collection, i.e. surveys and focus group) long with comfort breaks in-between. We attempted to prevent overspill by ensuring no close family relations between participants across the two mini-public groups and instructing control group participants not to talk to others about their mini-public experience or the ideas discussed during the mini-public for a week. The mini-publics in both settings were structured as follows: (1) Introduction/Context setting, introducing project, Hope for the Future, briefing on climate change and briefing on what city council can and cannot do; (2) Activity, identifying local concerns with focus on climate change, the participants deliberate across three tables, producing sticky notes, with one Hope for the Future facilitator per table; (3) Activity, thinking about solutions to identified concerns (clustered in themes by Hope for the Future during break between (2) and (3)), participants deliberate across three tables, producing sticky notes, with one Hope for the Future facilitator per table; (4) Activity, prioritising and developing projects based on solutions discussed in (3), deliberation across three tables, producing written-up proposals, with one Hope for the Future facilitator per table; (5) Wrap Up, proposals reflected back to group, flagging next steps. The structure, including times allocated to each activity were identical in both mini-public setups, the only difference was that in the mini-public setup with AI assistant, participants at each of the three deliberation tables could use the AI assistant (with the help of Hope for the Future facilitators, who would type in participants' questions and read out AI responses) in (2), (3) and (4).

To ensure the community was able to pursue any project ideas that emerged during the mini-public after the research project, Hope for the Future offered the participants the opportunity to continue working with them, pursuing project ideas beyond deliberation, funded by the Esmée Fairbairn Foundation. A follow-on workshop was conducted with 28 participants, helping them identify key stakeholders to help the project proposals develop into action and develop campaign action plans.

Methodology

AI Assistant

An AI-assisted chatbot was developed to provide evidence-based information on climate solutions to the general public in Kirklees, drawing on a carefully selected collection of documents to ensure the accuracy and reliability of its responses. This was done using a technique called retrieval augmented generation (RAG), which used a database composed of the selected documents to ground the responses of the large language model (LLM) in up-to-date information. The documents used for this database were divided into four categories: general-purpose scientific documents, national-level reports and policies, regional reports and policies, and council level reports and policies. These categories were selected to provide up-to-date scientific information, ground the responses in local context and improve the relevance of the responses generated by the tool. The model used for the project was Llama-3.3-70B-Instruct, an open-source language model and was hosted on HuggingFace, where it was accessed via a linked interface by the experimental group on the 9th of April. Before the tool was deployed, it was tested internally by requesting experts to use the tool and report back if they spotted any issues, which were then rectified.

Data Collection & Analysis

The aim of the project was to test the AI assistant with a community, whose voices are usually not heard in political debates on climate change and who are unlikely to have strong background knowledge or interest in climate change or climate solutions. The 29 participants, recruited by the Ravensthorpe Community Centre, were hence not meant to be representative of Kirklees, but they were meant to come from a seldom-heard community usually underrepresented in climate policy debates. All participants were compensated for their participation with a £60 voucher. Data was collected through anonymized, paper-based surveys before the mini-public and after the mini-pubic. Additionally, a focus group discussion was conducted and recorded after the mini-public in both settings. Furthermore, all discussions during the mini-publics and all interactions with AI assistant were recorded. The 42 proposals generated by the two mini-publics were scored by the two Kirklees Council climate change officers in a blind assessment (i.e. not knowing whether the proposal was generated by the mini-public group with or without AI assistant) to assess their quality. Additionally, they were scored by a researcher (human geography, research on city-level climate action) at the University of Leeds. We also interviewed the two Kirklees Council climate change officers, who scored the proposals after the scoring and obtained reflections from Hope for the Future on their experience and insights as facilitators. All data was collected using informed consent. Ethical approval was obtained for the research project from the University of Leeds, Business, Environment and Social Sciences (BESS+) Faculty Research Ethics Committee.

The 29 participants consisted primarily of local women (26) of Asian (Pakistani) background (25). All three male participants were in the control group (without AI assistant). From the three participants, recruited from the local Friends of Rectory Park group, who self-identified as white

British, two were in the control group (without AI assistant) and one in the experimental group (with AI assistant). These participants were likely to have a stronger background knowledge and interest in climate change. One participant preferred not to answer with respect to their ethnicity. The age of the participants ranged from 18 to 58, with an average of 38. The majority (19 out of 29) of participants were parents. Three participants indicated to have a disability, two in the control group (without AI assistant), one in the experimental group (with AI assistant). About half (15) of the participants had a college or university degree and one had a post-graduate degree; the remainder had in the majority a higher/secondary/further education degree or went to school up to 16 years and one participant visited school only up to primary school. The education profiles were comparable across the two mini-publics, though we had three non-responses for education in the experimental group (with AI assistant). The annual personal income of the participants was skewed towards the lower end, with 13 participants saying they had no personal income or only an income of up to £9,999, six having an annual personal income between £10,000 and £24,999 and eight an annual personal income between £25,000 and £49,999. The income profiles were again comparable across the two mini-publics, though we had two non-responses for income in the control group (without AI assistant).

The 42 proposals included a wide range of topics, specifically: energy (e.g. solar panels, local wind energy, community energy), transport (e.g. public transport, cycling, electric cars), flood defence, retrofitting, community food growing, tackling littering/pollution, (community) education.

Results

Did the AI assistant help citizens produce better policy input?

We asked both of Kirklees Council's climate change officers to assess the produced proposals using four assessment criteria or variables (Efficacy, Feasibility, Evidence-based, Overall Quality) on a scale from 0 to 10. Efficacy is supposed to capture how effective the proposal is in mitigating climate change (i.e. reducing GHG emissions) or adapting to climate change. Feasibility is measuring how feasible the proposal is in the Kirklees context. Evidence-based captures whether the proposal seems to draw on scientific/technical evidence. And Overall Quality is an overall assessment score. They assessed the proposals blindly, i.e. not knowing which were generated with the help of the AI assistant and which were generated without AI assistant. Figure 1 shows that both climate change officers ranked the proposals generated in the mini-public with AI assistant as of higher quality across all four variables. What is notable is that while participants in both mini-publics produced proposals that were ranked highly (e.g. 7, 8, 9), the mini-public without the AI assistant produced a wider range of proposals that included also proposals that scored rather low (e.g. 1, 2, 3). The score range for the proposals generated with AI assistant was narrower and did typically not include very low scores. Furthermore, the fewer proposals were produced in the mini-public with the AI assistant (18), compared to the mini-public without AI assistant (24), as the interaction with the AI assistant slowed down the deliberation process. There was no difference in the range of topics across the two mini-publics (with and without AI tool).

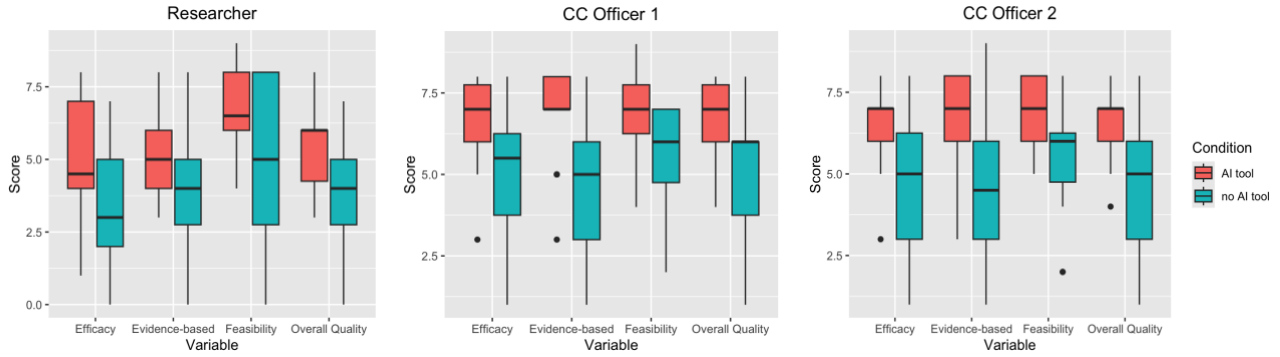


Figure 1: Boxplots showing the (blinded) scoring distribution, range median and outliers (dots) of the proposals.

We also asked a researcher who works on city-level climate action to assess the proposals blindly and while there were some differences in the overall scoring (e.g. the researchers ranked all proposals on littering as 1 with respect to efficacy, and generally was scoring proposals lower), proposals generated with AI assistant were still on average scored higher than proposals generated

without an AI assistant (Figure 1). Overall, we can conclude that using the AI assistant improved the quality of the proposals generated by citizens in the mini-public on average by about 37%.[1]

Here are two examples of highly (8) ranked proposals from the two mini-publics:

Mini-public with AI tool: Bike Lanes & Car Usage Reduction
Description: In Kirklees areas there should be more bike lanes and more no car zones. What action we want to see happen: More bike lanes, less cars on roads. Encourage walking short distances. How will this work: People will be forced to walk and not drive so much. Less carbon emitted + less petrol used, less fossil fuels used. More bike lanes allow people to transport without harming environment + way to exercise. To make this achievable: email council, petitions/surveys. Contact transport department to see if/what is possible. vote + get community united by telling them benefits of this, educate people how this could help and improve lives, health, fitness. Who is relevant in making this work: council, community, people with authority

Mini-public without AI tool: Energy
Description: Funding for solar panels, energy bulbs, fuel payments for people who are in fuel poverty. Eco-friendly appliances should be cheaper to purchase, e.g. vat/tax should be reduced. More heating options. More boiler schemes. Achievements; less energy bills, less pollution. Council and government can make this happen. More awareness when schemes are available.

Did mini-public participants find the AI assistant useful?

Using surveys at the start and at the end of the mini-public as well as a focus group after the mini-public, we also gathered data on participants' assessment of the AI assistant and the mini-publics overall. There was no difference in the satisfaction scores with the mini-public between the mini-public with and without AI assistant, in both settings, participants expressed high satisfaction scores. Hence access to the AI assistant did not improve or worsen participants' experience with the mini-publics.[2] Participants in the group with the AI assistant were also asked to assess how useful they found the AI assistant. Asked how useful they found the AI assistant on a scale between 1 (not useful at all) and 6 (very useful), the respondents scored the tool ranging between 4 (somewhat useful) and 6 (very useful), with an average score of 5.1 (i.e. useful). When asked to specify in what way they found the AI assistant useful, most participants ticked "It offered some interesting ideas"

[1] Calculation: The average Overall Quality score in the experimental group (with AI assistant) was 6.72, while the average in the control group (without AI assistant) was 5.125, the average difference is hence 1.595, to calculate the percentage improvement relative group control group we use the following calculation: 1.597/5.125 * 100 = 31.16. This is for climate change officer 1 assessment. In the case of climate change officer 2 it is 1.68/4.875 * 100 = 34.47. In the case of the researcher, it is 1.69/3.75 *100 = 45.07. If we take the average across 31.16, 34.47 and 45.07, then that's about 36.9%. The improvement across the more specific indicators (Efficacy, Feasibility, Evidence-based) has comparable magnitude. A t-test shows that the group mean differences in the scores are all statistically significant. For Overall Quality score, t-Test for scores from climate change officer 1: t = -3.44 (p = 0.001), t-Test for scores from climate change officer 2: t = -3.55 (p = 0.001), t-Test for scores from researcher: -3.357 (p = 0.0017)

[2] The mean satisfaction (on a 1-6 point scale) with the mini-public in the group without AI assistant was 5.357 and in the group with AI assistant 5.467, this difference is statistically insignificant (t = -0.58, p = 0.565)

(13 out of 15) and "It helped me/the group to understand what climate solutions work in Kirklees" (11 out of 15), while some also ticked "It helped to see limitations of some proposals" (7 out of 15), "It helped to improve proposals (make them more feasible or effective)" (5 out of 15) and "It helped me/the group to understand what Kirklees City Council can and cannot do with respect to tackling climate change" (4 out of 15). Negative assessments of the AI tools were hardly made, though two participants ticked "Some responses were difficult to understand" and one participant ticked "Some responses were misleading". It was also remarked in the comments section and in the focus group, that the AI assistant was occasionally slow in generating responses. Here certainly the AI assistant can be further improved technically. Overall, however it seems that participants approved the AI assistant and found it useful, although given how highly the participants scored the mini-public on its own, this did not translate in even higher satisfaction scores with the mini-public with AI assistant access.

If we compare whether access to the AI assistant changes participants perceptions of climate change, their self-assessed climate change knowledge and their understanding of how effective certain climate solutions are, we can see also no significant difference. Figure 2 shows changes, comparing participants pre- and post-mini-public responses for climate change concerns, self-assessed climate change knowledge and assessment of how effective a given climate solution (here, heating, i.e. installing heat pump) is. We can see that across both mini-publics climate change concerns have gone up, i.e. participating in a mini-public on climate solution raises people's concern about climate change, with or without AI assistant. Similarly, across both mini-publics self-assessed knowledge of climate change and climate solutions has on average improved simply by participating in the mini-public, but interestingly in the group with AI assistant access for some their self-assessed knowledge score decreased. This could indicate that they became less confident in how much they know about climate change and climate solutions as they participated in the mini-public and interacted with the AI assistant. Further analyses will need to be conducted to unpack this finding, but it could demonstrate that interacting with the AI assistant may lower people's confidence in their own understanding of climate change and may potentially result in them devaluing their lived experience as a source of knowledge when deliberating local climate solutions. Indeed, this concern was expressed by Hope for the Future, who facilitated the mini-publics. On the other hand, some in the group have seen a step-change increase in their self-assessed knowledge and this has narrowed the distribution significantly, with the whole group becoming more aligned in their self-assessed knowledge; something we do not observe for the mini-public without AI assistant. Finally, if assessing their "objective" knowledge gain, we can again see that across both mini-publics, participants improved their understanding that installing heat pump is an effective climate mitigation strategy. Here again the access to the AI assistant did overall not make much of a difference, simply

deliberating on climate solutions with others is sufficient to improve people's understanding of climate solutions.[3]

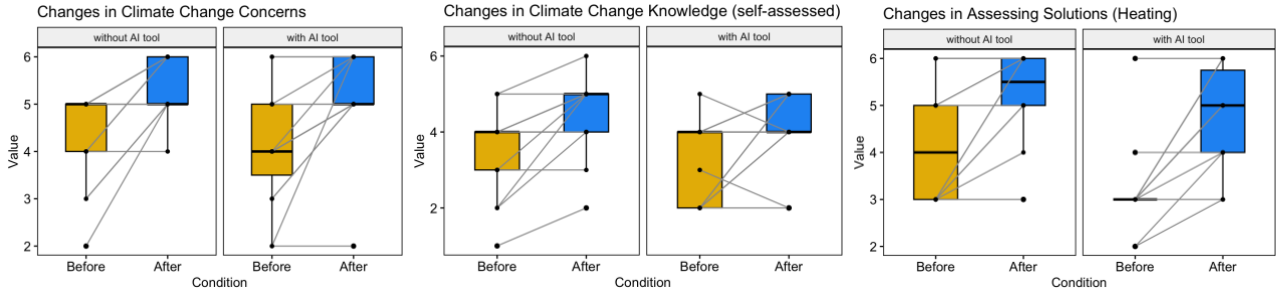


Figure 2: Figure shows changes in distribution, range and central tendencies in the two mini-publics between pre-mini-public and post-mini-public survey for Climate Change Concerns, Climate Change Knowledge (self-assessed) and a selected climate solution (heating, i.e. installing heat pumps).

Here is an example for how mini-public participants utilised the AI assistant

Mini-public with AI tool: Example interaction with AI tool (Deliberating concerns)
Participant 1: Shall we ask AI? (…) How is Ravensthorpe affected by climate change?
[Facilitator types in question into the chat interface with AI assistant]
Participant 2: That'd be interesting.
Facilitator: Let's see, what it will come up with.
[While waiting for response, some chatting about the area, its local businesses etc.]
Facilitator: Right, I have your answer, ooh, it's a long one
AI response [read out by facilitator]: According to my database Ravensthorpe, a suburb in Kirklees, is likely to be affected by climate change in various ways. While I don't have specific information about Ravensthorpe, I can say something about the area as whole, which is expected to experience certain climate-related impacts. The climate change risk and vulnerability assessment for Kirklees, which is part of the database I'm using, highlights several climate-related risks that could affect the area, including increased risk of flooding, particularly in areas near rivers and streams, warmer and wetter winters, with more frequent and intense storms, hotter and drier summers with increased risk of drought and heat waves, increased risks of wild fires, particular in areas with dry vegetation, and shifts in growing seasons and changes to local eco-systems. Ravensthorpe, being a rural area, may be particularly

[3] We have assessed a range of climate solutions: Recycling (typically overrated as climate solution); Diet (vegetarian/vegan, typically underrated as climate solution); Electric Vehicles; Food Waste; Public Transport; Banking; Saving Energy; Solar Energy; Buying Second Hand. For most of these we see similar results, i.e. knowledge improves in both mini-publics although there are some minor differences, e.g. for Recycling the assessment of its effectiveness has gone up in the mini-publics without AI assistant access, so the tendency to overrate its effectiveness actually further increased, which was not the case for the mini-public with AI assistant, on the other hand the assessment of the effectiveness of a vegetarian/vegan diets went up more clearly in the mini-public group without AI assistant tool, while in the mini-public group with AI assistant the central tendency did not go up, though the range and individual assessments did.

vulnerable to some of these impacts, such as flooding and changes to local eco-systems. The village's proximity to the river Calder and other water courses may also increase flood risk. However, it you ask for specific information how Ravensthorpe is currently affected by climate change and what measures are being taken to mitigate or reduce these impacts or if you look for more detailed information, I recommend contacting Kirklees Council or local community groups to inquire about climate-related initiatives and/or express your concerns.
Participant 1: Ok.
Participant 2: Thank you!
Participant 3: I didn't even know…
Participant 1: Yeah
Participant 2: It can get flooded…
[Participants produce sticky notes, highlighting concerns]
Participant 4: Did you write pest control? (…) rats (…)
Participant 1: I suppose pest control is rather a solution…
Participant 2: If it gets too hot, vegetation cannot grow…
Participant 1: Yeah, crops… What else? (…) River flooding, clearly the houses could be affected…

Overall, our results suggest that mini-publics are an effective format to increase people's awareness and understanding of climate change and climate solutions and produce insightful policy inputs. Mini-publics are a valued experience by the public. The AI assistant seems to further enhance the outcomes from the mini-publics, improving the quality of the policy input by about 37% on average, by helping citizens generate ideas and better understand what can and cannot work in a given local context.

Reflections

Following the mini publics, we believe that the AI was clearly useful in how participants communicated their ideas to Kirklees Council. There was an overall trend in the projects being scored higher and the AI tool was seemingly useful in getting participants to 'flesh out' some of their projects, including more detail and prompting some new ideas on how to develop project proposals past an initial idea. The AI model allowed participants to explore further ideas beyond their own skillset and develop new ways of thinking about climate and nature, and how to communicate these ideas. Participants utilised the AI tool in the way they may also use other AI or LLMs in their daily lives, and so it was beneficial to be able to utilise this in discussions about climate and nature, especially with a group of participants who may not be familiar with the subject matter.

It is clear however, that the AI model in its current form wasn't as well versed on the localities as those with lived experience in the area. The mini-publics were purposefully designed to ensure the AI tool was an added element, and that it did not lead conversations. It was a clear aim of the project that the ideas were generated by the community, in order to aim towards projects that would be able to solve real experiences of the community. Any facilitators who would like to utilise similar AI or LLMs must make sure they are leading with the voice of the community and not allowing AI models to lead on the problems or solutions, as they may not be effective in practice for the community.

It is paramount that in the development of new technologies we continue to involve communities, especially those who are underrepresented, to ensure that they are effective for all in society. This is particularly important when creating climate solutions at a local level.

Acknowledgements

We would like to thank Kirklees Council for their support for this research project. Without their cooperation, this project would have not been possible. In particular, we would like to thank Katharine Armitage, Service Director, Environmental Strategy and Climate Change, for embracing this project and agreeing to support us and to Louisa Page and Kayleigh Nalson, the two climate change officers at Kirklees Council, for supporting the project, scoring the mini-public proposals and giving their time to reflect with us on the project from the Kirklees Council perspective. We also would like to especially thank Jackie Ingham, Locality Manager at Kirklees Council, who established contact between us and the Ravensthorpe Community Centre. We were able to build on her trusted and deep relationship with the community centre, which is invaluable. But there were many involved from the Kirklees Council and we really appreciate their support, as we understand how challenging this is for underfunded and overburdened local councils.

We also would like to thank the Ravensthorpe Community Centre, and in particular Aysha Ayub and Nahid Ghafoor, for supporting our project, recruiting participants, providing their premises for the mini-publics and hosting us with so much generosity and warmth.

We are grateful for the funding (Reference: UKRI2043) from UK Research & Innovation (UKRI) that made this project possible.

Finally, we want to acknowledge the ethical implications of using AI and Large Language Models (LLMs) in particular. LLMs are problematic because of their excessive ecological footprint, due to energy and water (for cooling) demand. They are also highly problematic from an intellectual property perspective, having been built on huge amounts of human-generated data and knowledge, without any compensation or acknowledgement. Our position is that as these technologies are now in this world, they are here to stay – hopefully in future with greater oversight, regulation etc. – and the best we can do is to better understand how we can use these technologies to empower people. This project was conducted in this spirit. Going forward we will have to carefully consider whether any benefits from using these tools outweigh the costs (especially in terms of ecological footprint), but for this, we need to better understand possible benefits. We hope that our project contributes to advancing this understanding. We have pledged to fully offset the carbon footprint of our project, by donating the equivalent sum to Kirklees Council Woodland Creation project. Currently, we are finalising our estimates of the full carbon footprint.